PC expansion boards helpful and important

W hat feature does the Apple II and IBM PC have in common that contributed greatly to their success? Hint: it's missing from the Apple Macintosh, almost all home computers and even IBM PC-compatible portable computers. Answer: the ability to accept **expansion boards**, the circuit boards that plug into special "slots" within the computer cabinet.

At first blush, it might not sound so important, but take my word for it: if you plan to use your computer for business, you'll be sorry if you buy a computer without such ability.

The plain fact is that when you buy your computer you usually *don't know* which factors will determine its usefulness, or that many of these factors will relate directly to the computer's ability to accept expansion boards. Many new programs only work with certain boards. Also, many newly released speed- or memory-enhancements are only available with such devices.

The continuing success of the Apple II in the home-computer market and the IBM PC in the business market can be largely attributed to the hundreds of different expansion boards that are made especially for them.

'Smorgasboards'

For the IBM PC and PC-compatible computers, here are some of the most popular kinds of expansion boards used in business situations (only the so-called PC clones or true work-alike machines will accept the same expansion boards as the IBM PC):

✔ **Multifunction boards** typically provide additional memory, a clock/calendar module with battery, and serial or parallel ports. They usually come with software for RAM disks (which allows a portion of memory to emulate a disk drive) and print spoolers (which allows you to store output for printing so that you don't have

to wait for a printer to finish individual tasks before going on to the next). Prices start at around $400 and go up depending on how much extra memory is installed. Highly recommended is the Techmar Captain board.

✔ **Expanded memory specification boards** allow you to exceed the normal 640 kilobytes of memory possible with an IBM PC. The first of this type, which has attracted a significant following since being introduced earlier this year, is Intel's Above Board. It is mainly for "power users" who utilize large spread sheets or multiple programs that need the extra memory to operate effectively. A new version called the Above Board PS includes many of the features of the multifunction boards.

✔ **Graphics boards** are necessary to provide color or monochrome graphics (such as charts and graphs) on the computer's screen. IBM's enhanced graphics adaptor (EGA) board greatly improves the resolution and use of color. Other boards let you emulate color graphics on a monochrome screen (thus saving you the cost of a color screen).

✔ **Hard disk controller boards** are required when you install or attach a hard disk to your system. They use up a slot, like it or not. A new development is that some manufacturers are putting a small hard disk right on the circuit board. It sounds neat but it costs about double the price of separately mounted disks.

✔ **Accelerator boards** are the hottest boards around. Some manufacturers advertise a 300 percent increase in processing time. If you already have an IBM PC or PC-XT (the hard disk version of the PC), accelerator boards can give you the performance of IBM's newer PC-AT without junking your old system. Usual cost is $300 to $600, and I highly recommend them.

✔ **Communication boards** usually include built-in modems for hook-up to your telephone line. The simpler models can access external databases, receive electronic mail or ease PC-to-mainframe connections. The fancier models let you use your expensive computer as if it were an inexpensive autodialer or answering machine. I recommend them only if you have a need for them.

✔ **Local area network (LAN) boards** are used for multiple computers to be linked together to share expensive peripherals, such as large capacity hard disks or laser printers. These are not recommended in most personal computer situations because they tend to be very complicated to install and difficult to use without a great deal of expert attention.

Limited "slots" available

Depending upon which IBM PC or IBM PC-compatible computer is being used, you might have anywhere from three to eight slots (plugs for the boards) that can be used. So, carefully choosing which expansion boards to use is important. If you use up all slots and still need more, an "expansion chassis" can be used to add additional slots in another cabinet, but this is costly and usually unnecessary.

THE BOTTOM LINE: If you plan carefully, the use of expansion boards can greatly enhance the productivity of your current computer, even if you have an old model. To take advantage of them, however, you need to avoid buying lower-cost machines or portable computers that do not offer expansion capability.

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